

DONG Oil Pipe A/S

Datasheet C-9402

Deethaniser Column

DEOP Doc.no.: C750-JENL-P-DS-0027
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Project No. : NL6006
Client : DONG Oil Pipe A/S
Project title : DO Terminal Hejre Crude
Stabilization Project
Jacobs Document No.: NL6006/P.04/0013
Client Document No. :
Revision : A
Revision Description : For EBEP
Prepared by : CAHX
Checked by : SCHR
Discipline Approved by: SCHR
Project Approved by: LOM

Issue date : 9 Aug 2011

Submitted by:

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Project No. : NL6006	Report
Client : DONG Oil Pipe A/S	NL6006/P.04/0013, rev. A
Project Name : DO Terminal Hejre Crude Stabilization Project	Page 2 of 3

TABLE of CONTENTS

1	DEETHANISER COLUMN C-9402	3
---	---------------------------------	---

Project No. : NL6006
Client : DONG Oil Pipe A/S
Project Name : DO Terminal Hejre Crude Stabilization Project

Report
NL6006/P.04/0013, rev. A
Page 3 of 3

1 DEETHANISER COLUMN C-9402

The Deethaniser Column datasheet revision A is issued for EBEP. No changes from revision 1 issue for BEP.

Date format -> ddmmyyyy

Design Book No

First Page

Contractor Job No

Mesc No

Made by	Date		EQUIPMENT:	Deethaniser C-9402	Rev.	1			
R. Hartman	30-11-2010	30Nov2010	Plant:	O Terminal Hejre Crude Stabilization Proje	Date	27/01/11			
Checked by	Date		CONSIGNEE:	Dong Oil Pipe Denmark	Sign				
J.L. Nooijen	2-12-2010	02Dec2010	Eng. by:	Shell Global Solutions International B.V.	First sheet is sheet number				
Approved by	Date		Principal:	Dong Oil Pipe Denmark	Equipment No.	C-9402			
M. Voetter	2-12-2010	02Dec2010			Req. No.				

Project Dong Crude terminal Denmark
Plant Crude Degasser-, Gas Plant- and Treating Unit
Column C9402 - de-ethaniser
Version 1 icl comm HN
Stream table Summer 120
Last modification date 30-nov-10

Pro2Col export file C:\Apps\pro2col\DONG\C9401\C9401_120_rev0.p2d
Pro2Col data file C:\Apps\pro2col\DONG\C9401\C9401_120_rev0_+commHN.p2c

P2C Version 7,1

DRS Version 7,1



Equipment No. : C-9402

Number required : 1 (one)

OPERATING/MECHANICAL DATA

Description	Tray loading 1-5 (Note 3)	Tray loading 6-14 ((Note 3)	Tray loading 15-22 ((Note 3)	Units
Contents	Hydrocarbons	Hydrocarbons	Hydrocarbons	
Working temperature, max./normal/min.	87,1	73,7	48,1	°C
Working pressure - max./normal/min.	24,16	24,12	24,00	bar ga
- normal/min. vac. cond.				mbar a
Design temperature, upper/lower Note 4&5	-35 115	-35 115	-35 115	°C
Design pressure, internal/external Note 4&5	28,0	28,0	28,0	bar ga
Test pressure, hydrostatic/pneumatic				bar ga
Liquid - quantity	31641	28743	24645	kg/h
- surface tension	2,07	2,61	3,32	dyne/cm
- density at working temperature	422,9	430,6	445,6	kg/m³
Vapour - quantity	18891	15993	11894	kg/h
- molecular weight	49,3	44,8	38,9	kg/kmol
- density at working temperature	62,1	57,0	49,5	kg/m³
Heating/cooling medium				
- max. quantity required				kg/s
Diameter of shell ØD/ID	1300			mm
Length between tangent lines	19890			mm
Total packed height				mm
Height per bed				mm
Size and type of packing				
Number of packed sections				
Number of redistributors				
Height of skirt to bottom tangent line				mm
Type of heads Note 6	TORISPHERICAL			
Wall thickness - shell/head				mm
Corrosion allowance/lining/cladding				mm
Insulation thickness				mm
Trays - spacing/number required	750 5	750 9	600 8	mm/pcs
- type	CD Valve	CD Valve	CD Valve	
- lay-out in accordance with sheet(s)	8	7	6	

Total volume :	26,78 m³	Relief valve(s) - Type/size :	
Normal liquid volume :	1,46 m³	- Set pressure :	barga
Volume range required for level control :	2,01 m³	- Number req. :	
Wind pressure :	N/m²	Earth quake factor :	

INFORMATION TO BE SUBMITTED WITH THE TENDER

REMARKS AND/OR DESCRIPTION OF REVISIONS

Note 1: Liquid and vapour loads shown are for the 'base case summer 100/0' + 20% margin

Note 2: Column also designed for 'base case turndown'

Note 3: Shown for tray with highest loading

Note 4: Design Pressure excludes static head of liquid, Vendor to calculate. Maximum operating liquid level = 3000 mm, operating liquid density = 421.7 kg/m³

Note 5: Column to be designed for steam-out conditions. Steam-out conditions to be confirmed by Detailed Engineering Contractor.

Note 6: Suggested type of head, the most economically optimum type of head shall be selected by the Detailed Engineering Contractor.

Note 7: Shell Global Solutions International B.V. must review all drawings before construction

Rev 1: Design Pressure updated

Rev A: For EBEP

Rev 0: for Client review

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev	1	A			
R. Hartman	30Nov2010		Date	27/01/11	15/08/11			
Checked by:	Date		Sign.		CAHX			
J.L. Nooijen	02Dec2010		Sheet No. 1 cont'd on sheet No. 2					
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402					
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.					

Data/requisition sheet (cont. sheet) for PRESSURE VESSELS (Column)				Design book		No:		page:		
				Contr. Job		No:				
				MESC		No:				
MATERIAL SPECIFICATION										
Part			ASTM No.		Part			ASTM No.		
Shell			LTCS+3mm CA		Downcomers					
Cladding/lining of shell					Baffles					
Heads			LTCS+3mm CA		Internal pipe fittings					
Cladding/lining of heads					Stud bolts, external					
Reinforcing rings					Nuts, external					
Skirt, base plate, etc.					Bolts, internal					
Saddles					Nuts, internal					
Jacket					Gaskets, external					
Shell flanges					Gaskets, internal					
Nozzles (line pipe/plate)										
Liner of nozzles and manholes										
Flanges (ANS)										
Flanges (Non-ANS)										
Welding fittings										
Stiffening rings										
Insulation support rings										
Cleats for platforms, etc.										
Internal parts			SS 316L							
FABRICATION AND INSPECTION REQUIREMENTS										
Construction in accordance with:										
Inspection										
Inspection authority										
Stress relieving										
Special heat treatment				PWHT may be required						
Radiography										
Other non-destructive testing										
Chemical analysis										
Manufacturer's certificate - chemical analysis										
- mechanical data										
WEIGHTS										
Erection weight (shipping weight)				kg	Weight of internals				kg	
Total weight, operating				kg	Weight of insulation				kg	
Total weight, full of water				kg	Weight of fireproofing				kg	
REFERENCE DRAWINGS/LISTS										
Arrangement - construction - outline										
Standard vessel										
Additional drawings										
Welding electrodes, rods, etc.				See DEP 30.10.60.18-Gen.						
General remarks for vessels					Anchor bolt ring and base plate					
Flanged pipe nozzles					Lifting lug					
Thermowell nozzles					Name plate					
Carbon steel flanges					Support ring for insulation					
Vortex breaker					Inspection hole/handhole/					
Skirt/saddles/brackets					manhole/davits, etc.					
Note: This sheet is to be confirmed and/ or completed by the Detailed Engineering Contractor.										
Rev 1: Design Pressure updated				Rev A: For EBEP						
Rev 0: for Client review										
The manufacturer is responsible for ensuring that the equipment is designed and constructed in accordance with the specifications and codes referred to on the requisition and/or drawings. Furthermore, the manufacturer is responsible for ensuring that the design, including thicknesses of pressure parts, is satisfactory for the design conditions indicated on the requisition and/or drawings. Calculations and thicknesses of material supplied to the manufacturer are for information and tendering purposes only. The manufacturer shall make his own calculations for which he is fully responsible. the manufacturer shall ensure that the equipment supplied conforms to all the applicable codes and national statutory regulations, and he shall obtain all necessary approvals from statutory authorities										
Made by: R. Hartman	Date 30Nov2010	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark				Rev.	1	A		
Checked by: J.L. Nooijen	Date 02Dec2010					Date	27/01/11	15/08/11		
Approved by: M. Voetter	Date 02Dec2010					Sign.		CAHX		
						Sheet No. 2 cont'd on sheet No. 3				
						Equipment No. C-9402				
						Req. No.				

Data/requisition sheet (cont. sheet) for PRESSURE VESSELS (Column)				Design book	No:	page:	
				Contr. Job	No:		
				MESC	No:		

NOZZLE DATA				
Mark	Number	Service	Nom size / (min. ID) / flange rating	Remarks
N1	1	Reboiler Feed	DN300	w. vortex br. type A, no cover plate
N2	1	Product Outlet	DN150	with vortex breaker type A
N3	1	Reboiler Return	DN250	with half-open pipe
N4	1	Reflux	DN100	with elbow
N5	1	Vapour Outlet	DN100	
N6	1	Reboiler nozzle drain	DN50	blinded off, outside skirt
N7	1	Product nozzle drain	DN50	blinded off, outside skirt
N8	1	Utility nozzle	DN50	Note 1
N9	1	Top vent	DN50	Note 1

INSTRUMENT CONNECTIONS				
K1a/b	2	LG	DN50	Note 1,3
K2a/b	2	LZA LL	DN50	Note 1,3
K3a/b	2	LICA H/L	DN50	Note 1,3
K4	1	PG + Pdl	DN50	in vapour phase, Note 1
K5	1	TI	DN50	in liquid phase, Note 1
K6	1	PICA H/L	DN50	in vapour phase, Note 1
K7	1	TI	DN50	in liquid phase, Note 1
K8	1	PG + Pdl	DN50	in vapour phase, Note 1

MANHOLES ETC.				
A1	1	Reboiler manhole	DN500	Notes, 2,3
A2	1	Manhole	DN500	Note 2
A3	1	Manhole	DN500	Note 2
A4	1	Manhole	DN500	Note 2

Note 1: Minimum process requirements and elevation, to be confirmed by the Detailed Engineering Contractor.

Note 2: Manhole orientation and elevation to be checked by the Detailed Engineering Contractor.

Note 3: Placed in product compartment.

Rev 1: Design Pressure updated

Rev 0: for client review

Rev A: For EBEP

Made by:	Date	EQUIPMENT: Deethaniser C-9402	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date	PLANT: DO Terminal Hejre Crude Stabilization Project	Sign.		CAHX		
J.L. Nooijen	02Dec2010	CONSIGNEE: Dong Oil Pipe Denmark	Sheet No. 3 cont'd on sheet No. 4				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402				
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.				

Generated from:

Data/requisition sheet (cont. sheet) for Column			Design book	No:	page:
			Contr. Job	No:	
			MESC	No:	

Notes:

1. Dimensions in mm.
2. Drawing not to scale.
3. Manway to be provided in baffle between bottom sumps.

Rev 1: Design Pressure updated Rev A: For EBEP
Rev 0: for client review

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooijen	02Dec2010		Sheet No. 4 cont'd on sheet No. 5				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402				
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.				

Generated from:

Data/requisition sheet (cont. sheet) for Elbow inlet device			Design book No: _____ page: _____	
			Contr. Job No: _____	
			MESC No: _____	

Top view of elbow inlet device with internal below

Inner diameter of column	1300	mm
Feed nozzle number	N4	
Nozzle nominal size	DN100	
Nozzle minimum ID	102,3	mm
Elbow shape	type I	
Length main pipe	150	mm
Dollar plate	NO	
Vertical distance nozzle-centre to outlet, A	450	mm

MATERIALS		
Pipe material	SS316 L	
Corrosion allowance	-	mm

Notes:				
1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.				
2) Centre line of feed nozzle N4 to be 560 mm above tray floor of tray 22.				
3) Downcomers of tray 22 are displayed.				
4) Height of inlet weir on tray 22 to be 150mm				
5) Inlet weir to be provided with one 12 mm drain hole.				

Rev 1: Design Pressure updated
 Rev 0: for Client review

Rev A: For EBEP

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooijen	02Dec2010		Sheet No. 5 cont'd on sheet No. 6				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402				
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.				

Generated from:

Data/requisition sheet (cont. sheet) for Trays				Design book No: _____ page: _____	
				Contr. Job No: _____	
				MESC No: _____	

Top view of trays

Tray numbers	15-22	
Inner diameter of column	1300	mm
Space above tray	600	mm
VALVE TRAY BUBBLING AREA		
Required net free area	0,027	-
Number of valves per tray	30	
Type of valve	Sulzer RV-1	
Diameter of holes (2)	38,9	mm
Number of valves per tray	30	
Nominal leg length	11,11	mm
Cap thickness	2	mm
Tray panel thickness	2,0	mm
CONVENTIONAL DOWNCOMERS		
Number of passes	1	
Downcomer type	RECESSED SEALPAN	
Height of tray outlet weir	50	mm
SIDE DOWNCOMER:		
Downcomer top area	0,286	m²
Downcomer bottom area	0,171	m²
Downcomer clearance	69	mm
Downcomer exit width	69	mm
Depth of seal pans	69	mm

Notes:		
1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.		
2) Holes shall be evenly distributed: pattern to be specified by manufacturer		
3) <u>Even trays are shown.</u>		

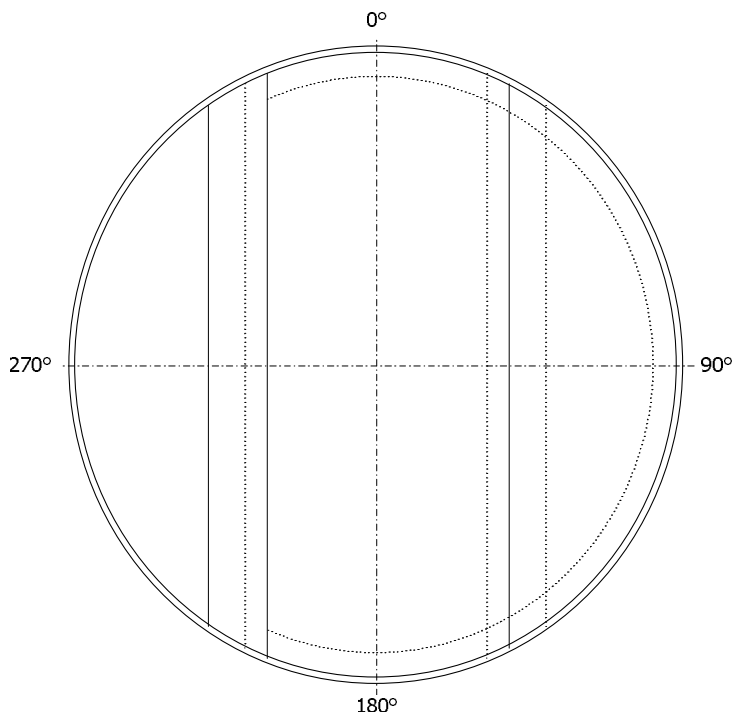
MATERIALS		
Tray material	SS316L	
Corrosion allowance	-	mm

Rev 1: Design Pressure updated
 Rev 0: for Client review

Rev A: For EBEP

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooljen	02Dec2010		Sheet No. 6 cont'd on sheet No. 7				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402				
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.				

Generated from:

Trays**Top view of trays**

Tray numbers	6-14	
Inner diameter of column	1300	mm
Space above tray	750	mm
VALVE TRAY BUBBLING AREA		
Required net free area	0,031	-
Number of valves per tray	34	
Type of valve	Sulzer RV-1	
Diameter of holes (2)	38,9	mm
Number of valves per tray	34	
Nominal leg length	11,1125	mm
Cap thickness	2	mm
Tray panel thickness	2,0	mm
CONVENTIONAL DOWNCOMERS		
Number of passes	1	
Downcomer type	RECESSED SEALPAN	
Height of tray outlet weir	50	mm
SIDE DOWNCOMER:		
Downcomer top area	0,363	m²
Downcomer bottom area	0,218	m²
Downcomer clearance	78	mm
Downcomer exit width	78	mm
Depth of seal pans	78	mm

Notes:

- 1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.
- 2) Holes shall be evenly distributed: pattern to be specified by manufacturer
- 3) [Even trays are shown.](#)
- 4) The tray spacing between tray 10 and 11 is 800 mm to allow for the manhole. Therefore the downcomer of tray 11 shall be extended so it is sealed in tray 10 liquid.

MATERIALS

Tray material	SS316L	
Corrosion allowance	-	mm

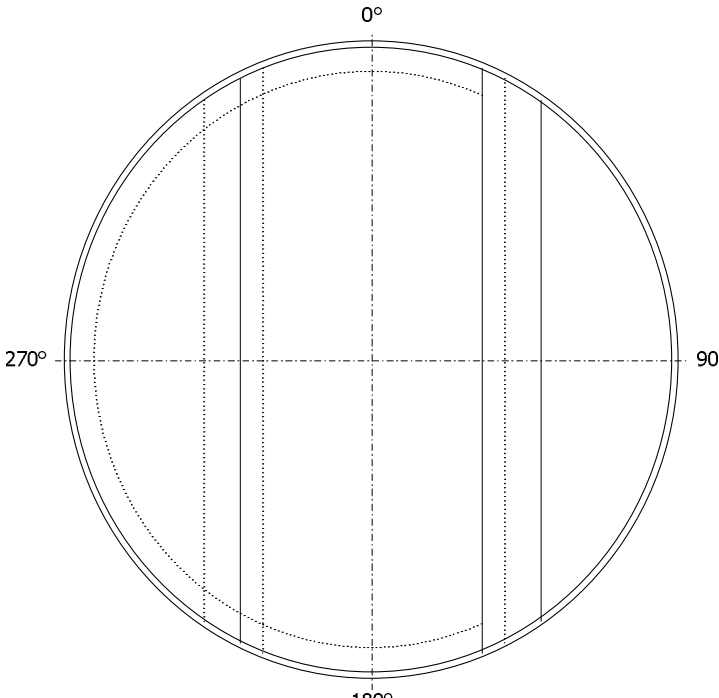
Rev 1: Design Pressure updated

Rev A: For EBEP

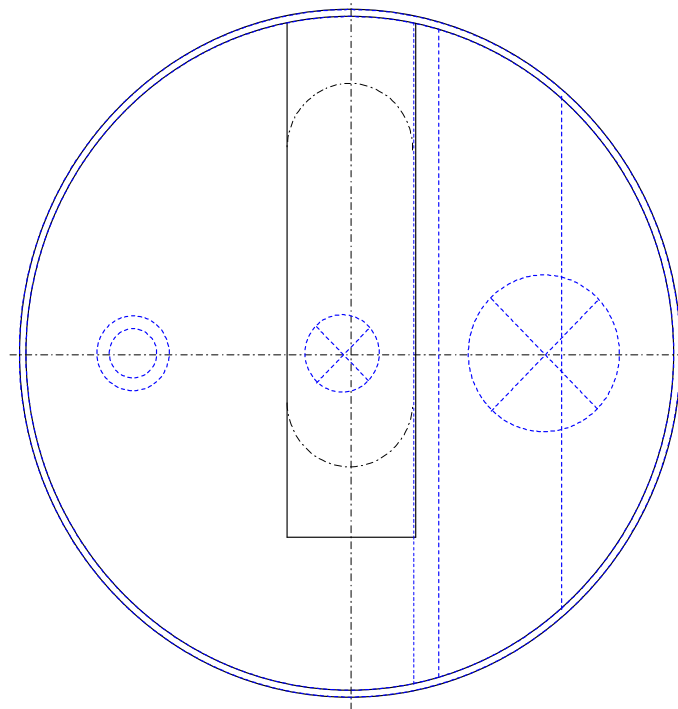
Rev 0: for Client review

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R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooijen	02Dec2010		Sheet No. 7 cont'd on sheet No. 8				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V.	Equipment No. C-9402				
M. Voetter	02Dec2010	Principal: Dong Oil Pipe Denmark	Req. No.				

Generated from:

Data/requisition sheet (cont. sheet) for Trays			Design book No: page: Contr. Job No: MESC No:																																																																																						
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Tray numbers</td><td>1-5</td><td></td></tr> <tr><td>Inner diameter of column</td><td>1300</td><td>mm</td></tr> <tr><td>Space above tray</td><td>750</td><td>mm</td></tr> <tr><td colspan="3" style="text-align: center;">VALVE TRAY BUBBLING AREA</td></tr> <tr><td>Required net free area</td><td>0,039</td><td>-</td></tr> <tr><td>Number of valves per tray</td><td>43</td><td></td></tr> <tr><td>Type of valve</td><td colspan="2">Sulzer RV-1</td></tr> <tr><td>Diameter of holes (2)</td><td>38,9</td><td>mm</td></tr> <tr><td>Number of valves per tray</td><td>43</td><td></td></tr> <tr><td>Nominal leg length</td><td>11,11</td><td>mm</td></tr> <tr><td>Cap thickness</td><td>2</td><td>mm</td></tr> <tr><td>Tray panel thickness</td><td>2,0</td><td>mm</td></tr> <tr><td colspan="3" style="text-align: center;">CONVENTIONAL DOWNCOMERS</td></tr> <tr><td>Number of passes</td><td>1</td><td></td></tr> <tr><td>Downcomer type</td><td colspan="2">RECESSED SEALPAN</td></tr> <tr><td>Height of tray outlet weir</td><td>50</td><td>mm</td></tr> <tr><td colspan="3" style="text-align: center;">SIDE DOWNCOMER:</td></tr> <tr><td>Downcomer top area</td><td>0,363</td><td>m²</td></tr> <tr><td>Downcomer bottom area</td><td>0,218</td><td>m²</td></tr> <tr><td>Downcomer clearance</td><td>78</td><td>mm</td></tr> <tr><td>Downcomer exit width</td><td>78</td><td>mm</td></tr> <tr><td>Depth of seal pans</td><td>78</td><td>mm</td></tr> </table>			Tray numbers	1-5		Inner diameter of column	1300	mm	Space above tray	750	mm	VALVE TRAY BUBBLING AREA			Required net free area	0,039	-	Number of valves per tray	43		Type of valve	Sulzer RV-1		Diameter of holes (2)	38,9	mm	Number of valves per tray	43		Nominal leg length	11,11	mm	Cap thickness	2	mm	Tray panel thickness	2,0	mm	CONVENTIONAL DOWNCOMERS			Number of passes	1		Downcomer type	RECESSED SEALPAN		Height of tray outlet weir	50	mm	SIDE DOWNCOMER:			Downcomer top area	0,363	m²	Downcomer bottom area	0,218	m²	Downcomer clearance	78	mm	Downcomer exit width	78	mm	Depth of seal pans	78	mm	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">Notes:</td></tr> <tr><td colspan="2">1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.</td></tr> <tr><td colspan="2">2) Holes shall be evenly distributed: pattern to be specified by manufacturer</td></tr> <tr><td colspan="2">3) <u>Odd trays are shown.</u></td></tr> <tr><td colspan="2">4) Tray 1 downcomer shall extend 1600 mm below top of reboiler baffle.</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="3" style="text-align: center;">MATERIALS</td></tr> <tr><td>Tray material</td><td>SS316L</td><td></td></tr> <tr><td>Corrosion allowance</td><td>-</td><td>mm</td></tr> </table>		Notes:		1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.		2) Holes shall be evenly distributed: pattern to be specified by manufacturer		3) <u>Odd trays are shown.</u>		4) Tray 1 downcomer shall extend 1600 mm below top of reboiler baffle.		MATERIALS			Tray material	SS316L		Corrosion allowance	-	mm
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Top view of half open pipe with internal below



Inner diameter of column	1300	mm
Feed nozzle number	N3	
Nozzle nominal size	DN250	
Nozzle minimum ID	242.9	mm
Length of pipe	1000	mm
MATERIALS		
Pipe material	SS316L	
Corrosion allowance	-	mm

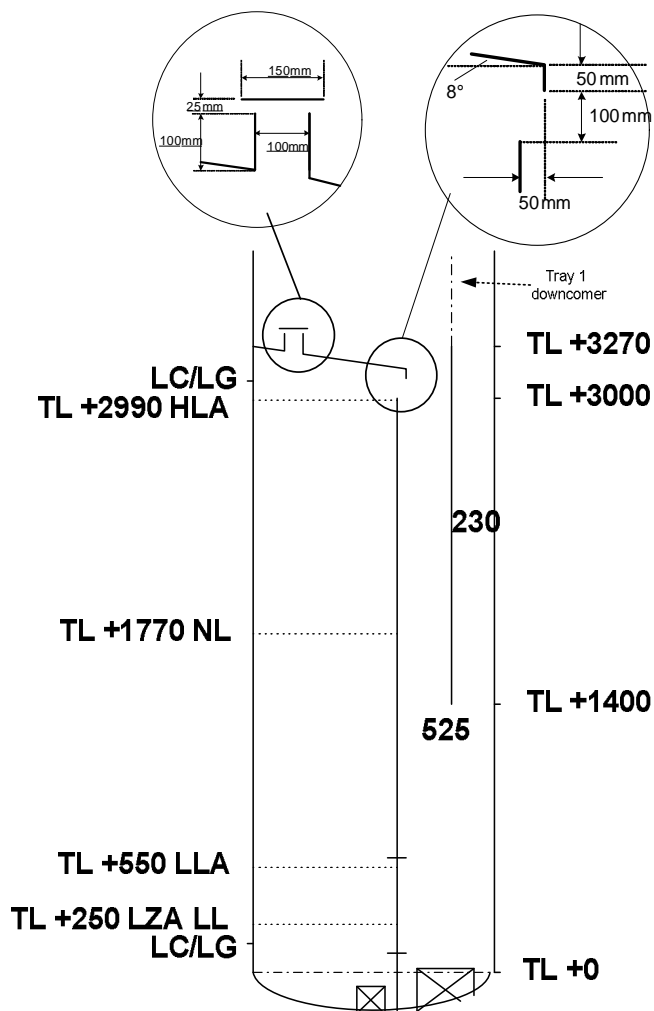
Notes:
1) Design and construction shall be in accordance with the requirements of DEP 31.20.20.31-Gen.
2) Half-Open pipe has to be closed at end.
3) Half-Open opening to face downward.
4) Centre line of feed nozzle N3 to be 520 mm above product compartment cover plate

Rev 1: Design Pressure updated
 Rev 0: for Client review

Rev A: For EBEP

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooijen	02Dec2010		Sheet No. 9 cont'd on sheet No. 10				
Approved by:	Date	Eng. By: Shell Global Solutions International B.V. Principal: Dong Oil Pipe Denmark	Equipment No. C-9402				
M. Voetter	02Dec2010		Req. No.				

Side view of column bottom



Product nozzle number (1)	N2	
Product nozzle nominal size	DN150	
Product nozzle, minimum required ID	146,3	mm
Reboiler nozzle number (2)	N1	
Reboiler nozzle nominal size	DN300	
Reboiler nozzle, minimum required ID	289	mm
Number of reboiler nozzles	1	
Width reboiler baffle (3,4,5)	525	mm
Height overflow baffle from TL	3000	mm
Width downcomer baffle(6)	230	mm

Notes:

- 1) Product outlet nozzle shall be equipped with a vortex breaker manufactured in compliance with Standard Drawing S 10.010, Type A. (See sheet 12)
- 2) Reboiler nozzle shall be equipped with a vortex breaker manufactured in compliance with Standard Drawing S 10.010, Type A, but without a cover plate. (See sht. 12)
- 3) Reinforcement ribs of the reboiler baffle shall only be allowed on the product compartment side .
- 4) Reboiler baffle to be provided with a 12 mm mouse hole at the lowest point.
- 5) Reboiler baffle to be provided with a hatchway.
- 6) Downcomer from tray 1 to be extended to TL +1400
- 7) Dimensions in mm

Rev 1: Design Pressure updated

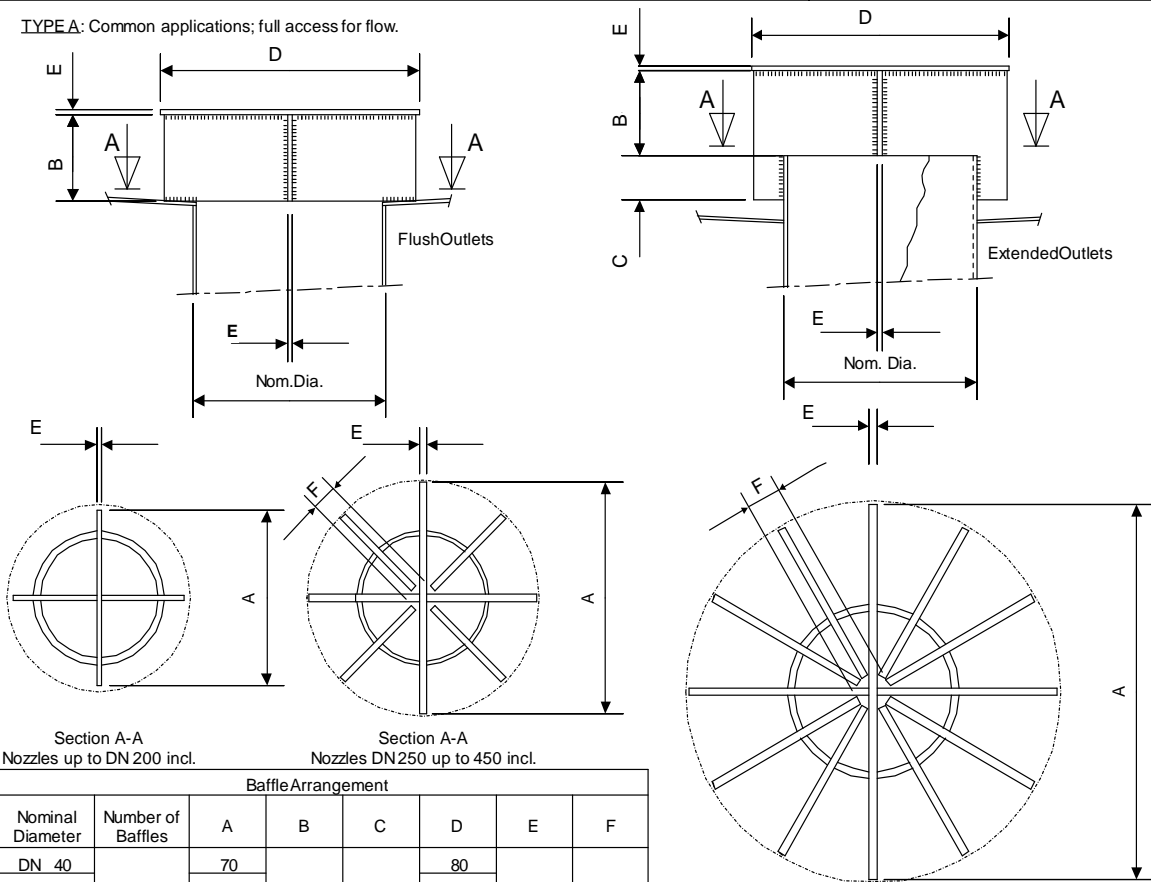
Rev 0: for Client review

Rev A: For EBEP

Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark Eng. By: Shell Global Solutions International B.V. Principal: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
Checked by:	Date		Sign.		CAHX		
J.L. Nooijen	02Dec2010		Sheet No. 10	cont'd on sheet No. 11			
Approved by:	Date		Equipment No.	C-9402			
M. Voetter	02Dec2010		Req. No.				

Generated from:

TYPE A: Common applications; full access for flow.



Section A-A
Nozzles up to DN 200 incl.

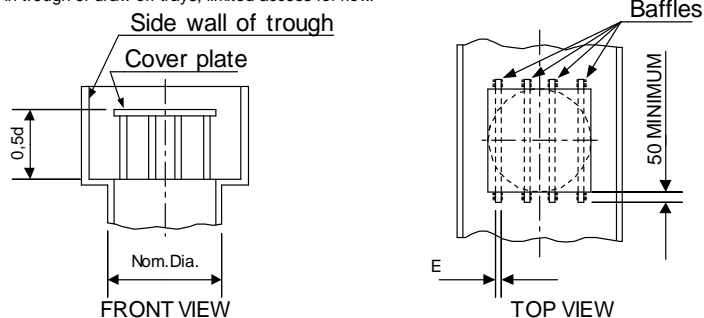
Section A-A
Nozzles DN250 up to 450 incl.

Section A-A
Nozzles DN500 and DN600

NOTES:

- 1) Dimension "E" is mandatory because thicker plate will obstruct inlet.
- 2) All sharp edges shall be rounded off.
- 3) Materials: as specified on requisition or equipment drawing.
- 4) all dimensions are in millimetres.

TYPE B: In trough of draw-off trays; limited access for flow.



BaffleArrangement	
Nominal Diameter	Number of baffles
100 < d < 200	2
200 < d ≤ 300	3
300 < d < 400	4
400 < d ≤ 500	5
500 < d < 600	6

All baffles in length direction of through
For through widths above $2d$ apply
type A.

FRONT VIEW					TOP VIEW				
F	May'95	MFEM/10		MFEM/1					
ISSUE	DATE	Ref.Ind.	Sign/init.	Ref.Ind.	Sign/init.	DESCRIPTION			
		Designer		Custodian					
APPROVED BY									

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STANDARD DRAWING
SHELLINTERNATIONALE
PETROLEUMMijB.V.-TheHague

VORTEXBREAKERS

Sheet No. 12
DRG No. 10.010 - F

Data/requisition sheet (cont. sheet) for		Design book		No:		page:	
		Contr. Job		No:			
		MESC		No:			
Made by:	Date	EQUIPMENT: Deethaniser C-9402 PLANT: DO Terminal Hejre Crude Stabilization Project CONSIGNEE: Dong Oil Pipe Denmark	Rev.	1	A		
R. Hartman	30Nov2010		Date	27/01/11	15/08/11		
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